

BREEDING PERIODS OF BIRDS IN THE KIMBERLEY DIVISION, WESTERN AUSTRALIA

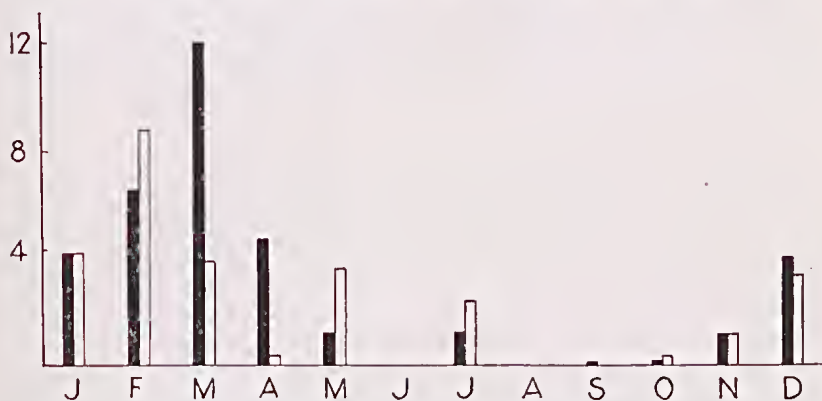
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During 1955 and 1956 the writer was stationed at the Government School at the Kimberley Research Station and took the opportunity of making as extensive a study as his duties allowed of the ornithology of the district. A general account of the observations made will be published separately. This paper will report the situation regarding the nesting periods of the species which came under the writer's attention so that the breeding regime in the Kimberley Division may be compared with that in the north-west and southern parts of Western Australia (cf. *W. Aust. Nat.*, 4: 149, 187; *The Emu*, 57: 99). Unfortunately a complete coverage of the breeding seasons was not possible as the writer was absent from the station between the end of December and the beginning of February in both years.

The Kimberley Research Station is situated on the Ord River, on Ivanhoe Station, 67 miles S.E. of Wyndham (lat. 15° 35' S., long. 128° 25' E.). Several hundred acres are cleared for experiments in tropical agriculture and some of the area is under irrigation.

CLIMATE

The most important element which has a bearing on the reproduction of birds is the incidence of the rainfall. The precipitation is sharply seasonal and the year may be divided into a summer "wet" and winter "dry." However, the rainfall is undependable and some summers may not receive any rain at all. This may cause distressing droughts resulting in extensive bird movements, either within the Kimberley Division or irruptions to other parts of Australia (cf. *W. Aust. Nat.*, 3: 177). Some "out of season" rains fell in July 1955 and 1956. Neither fall had any easily-discernible



Monthly rainfall in inches, Kimberley Research Station, for 1955 (solid bars) and 1956 (hollow bars).

effect, although they may have triggered the spring nesters. Observations made in a dry year would probably clarify the matter. The average annual rainfall at Ivanhoe Station (1907-1945) and the Kimberley Research Station (1946-1957) is 29.10 inches. In 1955 the total fall was 36.74 inches, and in 1956, 28.97 inches. The monthly distribution of the rainfall is shown in the accompanying graph.

THE ENVIRONMENT

The Research Station is at an altitude of 100 feet. The Ord River in the region flows through a flat red and black soil plain bounded by the Deception Range in the west and a low red sandstone ridge to the east. The banks of the river are generally 40 to 50 feet high. There are three billabongs, one of which contains permanent water. The river ceases to flow towards the end of the dry season but never completely dries up, huge expanses of surface water in river pools thus being available at all times.

From the standpoint of bird habitats the environs of the station may be divided into the following:—

1. River Margin. The riverine forest is a narrow strip, less than one hundred yards in width, of densely grown *Ficus*, freshwater mangroves and vines. The birds typical of this belt are the Pheasant-Coucal, Bar-breasted Honeyeater, Olive-backed Oriole, Buff-sided Robin and Bar-shouldered Dove.

2. Savannah Woodland. Typical trees are the eucalypts Coolibah, Cabbage Gum and River Gum. Characteristic birds are the Blue-winged Kookaburra, Sacred Kingfisher and Black-tailed Tree-Creeper.

3. Plain. Generally flat country bordering the river for several miles, vegetated with a variety of grasses and *Bauhinia*. It is the home of quail, grass finches, doves, the Fantail-Warbler and Bustard.

4. Billabongs. In the Kimberleys any small area of water unconnected with a waterway is by common usage termed a "billabong." Two such occur on the station. True billabongs (former river channels) occur at the old Ivanhoe homestead and at Black Pat Swamp. Representative birds are the herons, egrets, ibis and White-headed Shelduck.

5. Swampy Grassland. This habitat is, in the area under study, man-made (irrigation pastures and rice cultivations) but approximates to the natural habitat of low-lying grasslands which flood in the wet season and bear crops of wild rice and similar native grasses. Typical birds are rails, Swamphen, Brolga, Magpie Goose and Sea Curlew.

6. River Mudflats. Vast expanses of the river margins are usually exposed, being inundated, for periods of up to a week, only after heavy falls of rain. Birds occurring here are migratory waders, dotterels, Masked Plover, spoonbills, ibis, egrets and Plumed Tree-Duck.

BREEDING SEASONS

Four well-defined periods of nesting activity may be recognised.

1. The summer months, covering the wet period from December to March.

2. The autumn, from the end of the wet season into the start of the dry, i.e., from the end of March to May.

3. The winter dry period, from the end of May until the beginning of August.

4. The spring months to the onset of the wet, i.e., from August until November.

The birds breeding during these periods are as follows:—

SUMMER BREEDERS

Diamond Dove (*Geopelia cuneata*), Peaceful Dove (*G. striata*), Nankeen Night-Heron (*Nycticorax caledonicus*), Magpie Goose (*Anseranus semipalmata*), Restless Flycatcher (*Seisura iniquita*), Magpie-Lark (*Grallina cyanoleuca*), Rufous Song-Lark (*Cincloramphus mathewsi*), Rufous-throated Honeyeater (*Conopophila rufogularis*), Bar-breasted Honeyeater (*Gliciphila fasciata*), Star Finch (*Poephila ruficauda*), Yellow-rumped Finch (*Lonchura flaviprymna*), Chestnut-breasted Finch (*L. eastaneothorax*), Pictorella Finch (*L. pectoralis*), Crimson Finch (*Poephila phaeton*), Banded Finch (*P. hichenovii*).

AUTUMN BREEDERS

Diamond Dove, Peaceful Dove, Bar-shouldered Dove (*Geopelia humeralis*), Swanphen (*Porphyrio porphyrio*), Little Pied Cormorant (*Phalacrocorax melanoleucus*), White Ibis (*Threskiornis aethiopia*), Jabiru (*Xenorhynchus asiaticus*), Little Eagle (*Hieraaëtus morphnoides*), Whistling Eagle (*Haliastur sphenurus*), Northern Fantail (*Rhipidura rufiventris*), Reed-Warbler (*Aerocephalus australis*), Golden-headed Fantail-Warbler (*Cisticola exilis*), Red-browed Diamond-bird (*Pardalotus rubricatus*), Black-headed Diamond-bird (*P. melanocephalus*), Golden-backed Honeyeater (*Meliphaga laetior*), Yellow-tinted Honeyeater (*Meliphaga flavescens*), Horsfield Bush-Lark (*Mirafra javanica*), Star Finch, Crimson Finch, Banded Finch.

WINTER BREEDERS

Diamond Dove, Peaceful Dove, Bar-shouldered Dove, Black Duck (*Anas superciliosa*), Freckled Duck (*Stictonetta naevosa*), Red-collared Lorikeet (*Trichoglossus haematodus*), Little Corella (*Kakatoë sanguinea*), Red-winged Parrot (*Aprosmictus erythropterus*), Galah (*Kakatoë roseicapilla*), Budgerygah (*Melopsittacus undulatus*), Spotted Nightjar (*Eurostopodus guttatus*), Buff-sided Robin (*Poecilodryas superciliosa*), Red-browed Diamond-bird, Black-headed Diamond-bird, Yellow-tinted Honeyeater, Crimson Finch, Banded Finch, Long-tailed Finch (*Poephila acuticauda*), Masked Finch (*P. personata*).

SPRING BREEDERS

Peaceful Dove, Masked Plover (*Lobibyx miles*), Brown Hawk (*Falco berigora*), White Cockatoo (*Kakatoë galerita*), Blue-winged Kookaburra (*Dacelo leachii*), Sacred Kingfisher (*Haleyon sanctus*), Red-backed Kingfisher (*H. pyrrophygia*), Rainbow-bird (*Merops ornatus*), Fairy Martin (*Hylochelidon ariel*), Restless Flycatcher, Brown Flycatcher (*Microeca leucophaea*), Rufous Whistler (*Pachycephala rufiventris*), Magpie-Lark, Black-faced Cuckoo-Shrike (*Coracina novae-hollandiae*), White-winged Triller (*Lalage suerrii*), White-breasted Wood-Swallow (*Artamus leucorhynchus*), Black-faced Wood-Swallow (*A. cinereus*), Little Wood-Swallow (*A. minor*), Mistletoe-bird (*Dicaeum hirundinaceum*), Red-browed Diamond-bird, Black-headed Diamond-bird.

RESIDENT BIRDS NOT OBSERVED BREEDING

For the sake of completeness the following list of resident species, but on which the writer has no breeding data, is appended:

Emu (*Dromaius novae-hollandiae*), Plumed Pigeon (*Lophophaps plumifera*), White-quilled Rock-Pigeon (*Petrophassa albipennis*), Crested Pigeon (*Oeyphaps lophotes*), Floek Pigeon (*Histriophaps histrionica*), Banded Landrail (*Hypotaenidia philippensis*), Marsh Crake (*Porzana pusilla*), Little Grebe (*Podiceps novae-hollandiae*), Darter (*Anhinga rufa*), Black-fronted Dotterel (*Charadrius melanops*), White-headed Stilt (*Himantopus himantopus*), Australian Pratincole (*Stiltia isabella*), Southern Stone-Curlew (*Burhinus magnirostris*), Bustard (*Eupodotis australis*), Brolga (*Grus rubicunda*), Royal Spoonbill (*Platula leucorodia*), Egret (*Egretta alba*), Little Egret (*E. garzetta*), White-fronted Heron (*Notophox novae-hollandiae*), White-necked Heron (*N. pacifica*), Whistling Tree-Duck (*Dendrocygna arcuata*), Plumed Tree-Duck (*D. eytoni*), White-headed Shelduck (*Tadorna radjah*), Spotted Harrier (*Circus assimilis*), Swamp Harrier (*C. approximans*), Australian Goshawk (*Accipiter fasciatus*), Collared Sparrowhawk (*A. cirrocephalus*), White Goshawk (*A. novae-hollandiae*), Wedge-tailed Eagle (*Uroaëtus audax*), White-breasted Sea-Eagle (*Haliuëtus leucogaster*), Black Kite (*Milvus migrans*), Little Falcon (*Falco longipennis*), Kestrel (*F. cenchroides*), Boobook Owl (*Ninox novae-selandiae*), Red-tailed Black Cockatoo (*Calyptorhynchus banksii*), Cockatiel (*Leptolophus hollandicus*), Frogmouth (*Podargus strigoides*), Azure Kingfisher (*Ceyx azureus*), Pallid Cuckoo (*Cuculus pallidus*), Golden Bronze-Cuckoo (*Chalcites lucidus*), Pheasant-Coucal (*Centropus phasianinus*), Willy Wagtail (*Rhipidura leucophrys*), Northern Shrike-Thrush (*Colluricincla woodwardi*), Brown Shrike-Thrush (*C. brunnea*), Shrike-Tit (*Fulcunculus frontatus*), Papuan Cuckoo-Shrike (*Coracina papuensis*), Grey-crowned Babbler (*Pomatostomus temporalis*), White-throated Warbler (*Gerygone olivacea*), Weebill (*Smicrornis brevirostris*), Red-backed Wren (*Malurus melanocephalus*), White-winged Sittella (*Neositta leucoptera*), Black-tailed Tree-Creeper (*Climacteris*

melanura), Brown Honeyeater (*Gliciphila indistincta*), Blue-faced Honeyeater (*Entomyzon cyanotis*), Silver-crowned Friar-bird (*Philemon argenticeps*), Olive-backed Oriole (*Oriolus sagittatus*), Pipit (*Anthus novae-zeelandiae*), Zebra Finch (*Poephila castanotis*), Great Bower-bird (*Chlamydera nuchalis*), Crow (*Corvus ceciliae*), Black-throated Butcher-bird (*Cracticus nigrogularis*), Black-backed Magpie (*Gymnorhina tibicen*).

MIGRATORY, PROBABLE BREEDERS

Koel (*Eudynamys scolopacea*), Channel-bill Cuckoo (*Scythrops novae-hollandiae*), Eastern Roller (*Eurystomus orientalis*).

MIGRATORY, NON-BREEDERS

Grey Plover (*Squatarola squatarola*), Oriental Dotterel (*Eupoda asiatica*), Sea Curlew (*Numenius madagascariensis*), Whimbrel (*N. phaeopus*), Wood Sandpiper (*Tringa glareola*), Common Sandpiper (*T. hypoleucis*), Greenshank (*Tringa nebularia*), Marsh Sandpiper (*T. stagnatalis*), Sharp-tailed Sandpiper (*Erolia acuminata*), Snipe (*Gallinago megala*), Oriental Pratincole (*Glareola maldivarum*), Fork-tailed Swift (*Micropus pacificus*), Oriental Cuckoo (*Cuculus saturatus*).

CASUAL VISITORS

Pelican (*Pelecanus conspicillatus*), White-winged Black Tern (*Chlidonias leucoptera*), Marsh Tern (*C. hybrida*), Caspian Tern (*Hydroprogne caspia*), Crested Tern (*Sterna bergii*), Gull-billed Tern (*Gelochelidon nilotica*), Pied Heron (*Notophox picata*), Red Goshawk (*Erythrorhynchus radiatus*), Square-tailed Kite (*Lophoictinia isura*), Black-breasted Buzzard (*Hamirostra melanosternon*), Black-shouldered Kite (*Elanus notatus*), Peregrine Falcon (*Falco peregrinus*), Black Falcon (*Falco subniger*), Osprey (*Pandion haliaetus*), Varied Lorikeet (*Psittenteles versicolor*), Northern Rosella (*Platyccircus adscitus*), Port Lincoln Parrot (*Barnardius zoururus*), Brush Cuckoo (*Cacomantis variolosus*), Banded Honeyeater (*Myzomela pectoralis*).

SUMMARY OF BREEDING SEASONS

It will be seen that some species breed through more than one of the periods previously indicated; thus the Diamond and Peaceful Doves have the most protracted nesting periods, breeding virtually throughout the year excepting early summer. The two Diamond-birds also have a lengthy nesting period, exclusive of the actual wet months. Most of the other species have more restricted periods.

In the following tables are set out the detailed nesting observations made on the breeding species of the Kimberley Research Station during 1955 and 1956.

Except where otherwise indicated, dates refer to the finding of eggs.

TABLE 1.—NESTING RECORDS FROM KIMBERLEY RESEARCH STATION
—1955.

| | |
|-------------------------------|--|
| Diamond Dove | Nests founds in all months except October, November and December. No apparent peak period. |
| Peaceful Dove | Nests found in all months except November and December. Peak period beginning of "dry." |
| Bar-shouldered Dove | April 19, April 23, May 7 (young), June 5, June 27, July 8. |
| Swamphen | April 19, April 20 (2 nests). |
| Masked Plover | October 3. |
| Magpie Goose | Young birds observed on swamps February, March and April. |
| Red-collared Lorikeet | June 20. Young birds sold by aborigines in July. |
| Budgeryah | June 20, June 29, July 15, September 29. |
| Spotted Nightjar | Many nests found in June and July. |
| Red-backed Kingfisher | September 29, October 15, October 17, November 5, November 9, December 3. |
| Sacred Kingfisher | September 29, October 2 (2 nests). |
| Blue-winged Kookahurra | September 22. |
| Northern Fantail | May 29 (building). |
| Restless Flycatcher | September 29, October 2, October 17, November 9, December 3; but many other nests found in that period and not recorded. |
| Brown Flycatcher | September 29, October 8, October 15. |
| Buff-sided Robin | Large young observed in July. |
| Rufous Whistler | September 30, October 8, October 15. |
| Magpie-Lark | February 24, March 2, March 3, September 29, October 17, October 20, November 21, December 3. |
| Black-faced Cuckoo-Shrike | September 29 (building). |
| White-winged Triller | Large young observed in July. |
| Golden-headed Fantail-Warbler | Large young in April. |
| White-breasted Wood-Swallow | September 29 (young), October 8 (building). |
| Black-faced Wood-Swallow | September 28 (building), October 8 (young), October 15, October 17. |
| Little Wood-Swallow | October 17 (feeding young). |
| Mistletoe-bird | October 18 (young just left the nest). |
| Red-browed Diamond-bird | Records from April to October. |
| Black-headed Diamond-bird | Records from April to October. |
| Golden-backed Honeyeater | March 28 (building) two nests. |
| Rufous-throated Honeyeater | Records from February, March, April, November, December. |
| White-gaped Honeyeater | June 16, June 26, July 5. |
| Yellow-tinted Honeyeater | Records from April, May, June, July, August and November. |
| Bar-breasted Honeyeater | February 24 (young). |
| Horsfield Bush-Lark | Young observed in March and April. |
| Star Finch | Records to February, March, April and May. Building noted in December. |
| Gouldian Finch | June 26, recently-vacated nest found July 13. |
| Yellow-rumped Finch | Many nests in February, March, April. |
| Chestnut-breasted Finch | Do. |
| Pictorella Finch | Do. |
| Crimson Finch | Records from February to July. |
| Long-tailed Finch | June 20, June 26 (building), July 5, July 13, July 20, July 21. |
| Double-bar Finch | Records from February to July. |
| Masked Finch | March 5, June 18, June 20. |

SUMMARY

1. Number of species observed: 160.
2. Number of species noted breeding: 59. (a) Summer: 15. (b) Autumn: 20. (c) Winter: 19. (d) Spring: 21.
3. Number of resident species not observed breeding: 64.
4. Number of migratory species, probable breeders: 3.
5. Number of migratory species, non-breeders: 14.
6. Number of casual visitors: 18.

TABLE 2.—NESTING RECORDS FROM THE KIMBERLEY RESEARCH STATION
—1956.

| | |
|-------------------------------|--|
| Diamond Dove | Records from all months except October, November, December. |
| Peaceful Dove | Records from all months except November and December. |
| Bar-shouldered Dove | Three nests with eggs in April. |
| Swamphen | May 18. |
| Little Pied Cormorant | 22 nests containing eggs and young March 28. |
| Masked Plover | November 21, November 24, December 8, December 9. |
| White Ibis | Colony of ca. 100 nests March 28. |
| Jabiru | April 21 (eggs hatching). |
| Nankeen Night-Heron | Large colony of about 40 nests February 26. Mostly small young, a few with eggs. |
| Black Duck | Young birds noted June and July. |
| Freckled Duck | Young birds noted in June. |
| Little Eagle | April 21 (eggs just laid). |
| Whistling Eagle | April 21 (small young). |
| Brown Hawk | October 26 (2 half-developed young). |
| Red-collared Lorikeet | July 16. |
| Little Corella | Young birds noted end of June and July. |
| Galah | June 29, July 8. |
| White Cockatoo | Young birds sold by aborigines in October and November. |
| Budgerigah | July 25, August 9. |
| Blue-winged Kookaburra | Young birds just left nest October 25. |
| Sacred Kingfisher | September 14, September 21, September 28, October 4, December 9. |
| Red-backed Kingfisher | September 8, September 14, November 11. Two nests August 28, one with eggs, the other with young. |
| Rainbow-bird | Began digging nesting burrows end of August, young emerged in November. |
| Fairy Martin | September 28 (large young). |
| Restless Flycatcher | February 26, March 9, August 7, August 8, August 28 (four nests, one with egg, three with chicks), October 21, October 28 (young), December 8 (young). |
| Buff-sided Robin | June 14. |
| Magpie-Lark | Records from February, March, October, November and December. |
| Black-faced Cuckoo-Shrike | August 9 (building), August 28 (building). |
| White-winged Triller | August 8, August 15, August 28 (two nests). |
| Golden-headed Fantail-Warbler | March 14 (young), July 26 (feeding young). |
| Rufous Song-Lark | February 14, March 25, April 2 (young). |
| White-breasted Wood-Swallow | September 2, September 9 (building), September 24 (young). |
| Black-faced Wood-Swallow | October 30 (one young, one egg). |
| Little Wood-Swallow | October 30 (entering nesting hole). |
| Black-tailed Tree-Creeper | October 31 (young birds). |
| Red-browed Diamond-bird | Recorded from April to June. |
| Black-headed Diamond-bird | Recorded from April to August. |
| Rufous-throated Honeyeater | Recorded from February, March, April, November and December. |
| White-gaped Honeyeater | July 18 (young). |
| Yellow-tinted Honeyeater | May 27 (2 young), July 2 (young), October 30 (2 young). |
| Bar-breasted Honeyeater | February 25 (Wyndham), March 8 (young). |
| Star Finch | Records from February to May. |
| Yellow-rumped Finch | Records from February, March, April. |
| Chestnut-breasted Finch | Do. |
| Pictorella Finch | Do. |
| Crimson Finch | Records from February to July. |
| Double-bar Finch | Do. |
| Masked Finch | June. |

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